

AMENDMENTS TO THE CLAIMS

1. (Original) A planar structure expandable into a 3-D structure, the planar structure comprising: first and second spaced side beams which extend along a longitudinal axis; and a plurality of spaced cross-bands which connect the side beams together wherein a first set of the cross-bands are expandable in a first direction substantially perpendicular to the longitudinal axis to form a 3-D structure.
2. (Original) The planar structure as claimed in claim 1, wherein a second set of the cross-bands are expandable in a second direction substantially opposite the first-direction to form a mesh-like 3-D structure.
3. (Original) The planar structure as claimed in claim 2, wherein adjacent cross-bands are expandable in the opposite directions to form a mesh-like 3-D structure.
4. (Original) The planar structure as claimed in claim 1, wherein the planar structure plastically deforms during expansion so that the 3-D structure is free standing.
5. (Original) The planar structure as claimed in claim 2, wherein the planar structure plastically deforms during expansion so that the 3-D structure has a cylindrical geometry.
6. (Original) The planar structure as claimed in claim 2, wherein the 3-D structure is a tubular stent.
7. (Original) The planar structure as claimed in claim 1, wherein the planar structure includes a conductive foil.
8. (Original) The planar structure as claimed in claim 1, wherein each of the cross-bands includes a series of folded beams.
9. (Original) The planar structure as claimed in claim 8, wherein the folded beams have an involute pattern.
10. (Original) The planar structure as claimed in claim 8, wherein the folded beams have a switchback pattern.

11. (Original) The planar structure as claimed in claim 8, wherein each of the cross-bands includes hinges for interconnecting adjacent folded beams.

12. (Original) The planar structure as claimed in claim 1, wherein the side beams and cross-bands include biocompatible surface coatings.

13. (Original) The planar structure as claimed in claim 1, wherein the side beams and cross-bands are made of a biocompatible metal.

14. (Original) The planar structure as claimed in claim 1, wherein the cross-bands are made of a shape-memory alloy and wherein the planar structure is self-expandable.

15. (Original) The planar structure as claimed in claim 1, wherein the side beams and cross-bands are made of at least one of a biocompatible and a biodegradable polymer.

16. (Original) The planar structure as claimed in claim 1, wherein the side beams and cross-bands are formed by removing material from a sheet of material.

17. (Original) The planar structure as claimed in claim 16, wherein the sheet of material includes conductive foil and wherein side beams and cross-bands are formed by electric discharge machining the conductive foil.

18. (Original) The planar structure as claimed in claim 1, wherein at least the first side beam includes a link portion having a mechanical strength lower than other portions of the first side beam to allow the first side beam to break at the link portion during expansion of the first set of cross-bands.

19. (Original) The planar structure as claimed in claim 18, wherein the link portion is thinned relative to the other portions of the first side beam.

20. (Original) The planar structure as claimed in claim 18, wherein the link portion is made of a fragile material relative to the other portions of the first side beam.

21. (Original) The planar structure as claimed in claim 18, wherein the 3-D structure is a helical coil.

22. (Original) The planar structure as claimed in claim 21, wherein the helical coil comprises at least one electrical inductor.

23. (Original) The planar structure as claimed in claim 21, wherein the helical coil includes first and second spaced rings at opposite ends thereof and wherein each of the rings is formed by an adjacent pair of expanded cross-bands.

24. (Original) The planar structure as claimed in claim 23, wherein at least the first ring includes a dielectric part which mechanically connects but electrically insulates adjacent portions of the first ring.

25. (Original) The planar structure as claimed in claim 23, wherein at least the first ring includes a link portion having a mechanical strength lower than other portions of the first ring to allow the first ring to break at the link portion during expansion of the first set of cross-bands to open an electrical path formed by the first ring.

26. (Original) The planar structure as claimed in claim 1, wherein at least one of the side beams and the cross-bands includes a dielectric part which mechanically connects but electrically insulates adjacent portions of the at least one of the side beams and the cross-bands.

27. (Withdrawn) An assembly comprising: a planar structure including: a pair of spaced side beams which extend along a longitudinal axis; and first and second sets of spaced cross-bands that connect the side beams together; and a balloon mounted on the cross-bands so that adjacent cross-bands are disposed on opposite first and second sides of the balloon wherein inflation of the balloon causes the first set of cross-bands on the first side of the balloon to expand in a first direction and the second set of cross-bands on the second side of the balloon to expand in a second direction substantially opposite the first direction and substantially perpendicular to the longitudinal axis to form a mesh-like, 3-D structure.

28. (Withdrawn) The assembly as claimed in claim 27, wherein the balloon is an angioplasty balloon and the 3-D structure is a tubular stent.

29. (Withdrawn) The assembly as claimed in claim 28, further comprising a catheter tube in fluid communication with the angioplasty balloon.

30. (Withdrawn) A device for use in a electric discharge machining system to form an expandable planar structure from a conductive planar workpiece, the device comprising: a substrate; and a planar electrode formed on the substrate and including a pair of spaced, side electrode members extending along a longitudinal axis to form a pair of side beams of the structure from the workpiece and a plurality of spaced cross-band electrode members to form a plurality of spaced cross-bands of the structure from the workpiece, the cross-bands connecting the side beams together.

31. (Withdrawn) The device as claimed in claim 30, wherein the side electrode members and the cross-band electrode members comprise a plurality of copper structures formed by electroplating the substrate.

32. (Withdrawn) The device as claimed in claim 30, wherein the substrate includes a semiconductor wafer and wherein the side electrode members and the cross-band electrode members comprise a plurality of semiconductor structures formed by removing material from the semiconductor wafer.

33. (Withdrawn) The planar structure as claimed in claim 1, wherein the side beams are substantially straight and continuous.

34. (Withdrawn) The planar structure as claimed in claim 1, wherein the side beams are substantially straight or continuous.

35. (Withdrawn) The planar structure as claimed in claim 1, wherein the 3-D structure comprises at least one electrical conductor.